



Apple Multiple Scan 20 Display

User's Guide



© 1996 Apple Computer, Inc. All rights reserved.

Under the copyright laws, this manual may not be copied, in whole or in part, without the written consent of Apple. Your rights to the software are governed by the accompanying software license agreement.

The Apple logo is a trademark of Apple Computer, Inc., registered in the U.S. and other countries. Use of the "keyboard" Apple logo (Option-Shift-K) for commercial purposes without the prior written consent of Apple may constitute trademark infringement and unfair competition in violation of federal and state laws.

Every effort has been made to ensure that the information in this manual is accurate. Apple is not responsible for printing or clerical errors.

Apple Computer, Inc.
1 Infinite Loop
Cupertino, CA 95014-2084
(408) 996-1010

Apple, the Apple logo, LaserWriter, Macintosh, and Power Macintosh are trademarks of Apple Computer, registered in the U.S. and other countries.

Apple Desktop Bus and Mac are trademarks of Apple Computer, Inc.

Adobe, Adobe Illustrator, Adobe Photoshop, PostScript, and SuperPaint are trademarks of Adobe Systems Incorporated or its subsidiaries and may be registered in certain jurisdictions.

The Energy Star logo is a service mark of the U.S. Environmental Protection Agency.

Helvetica and Times are registered trademarks of Linotype-Hell AG and/or its subsidiaries.

Trinitron is a trademark of Sony Corporation, registered in the U.S. and other countries.

Simultaneously published in the United States and Canada.

Mention of third-party products is for informational purposes only and constitutes neither an endorsement nor a recommendation. Apple assumes no responsibility with regard to the performance or use of these products.



Contents

• • • •

Communications regulation information	vi
1 Setting Up	1
Important safety instructions	1
What about electromagnetic emissions?	2
Getting ready to set up	3
Your Apple Multiple Scan 20 Display at a glance	4
Choosing a good location for your monitor	5
Lifting and positioning the monitor	5
Do you need a video card?	7
Using more than one monitor	7
Connecting the monitor to your computer	8
Connecting your keyboard to the monitor	9
Turning the monitor on	10
Installing the display software	11

2 Using the Display Software 13

About the Control Strip	13
Working with the Control Strip	14
Changing screen resolution	15
Other things you can do with the Monitors control panel	16
Conserving energy	17
What happens after you turn on the energy saving feature	17
Using Energy Saver with a screen saver	18
Using ColorSync	18
Configuring the Control Strip	20
Showing and hiding the Control Strip	20
Setting a keyboard command to show and hide the Control Strip	21
Changing the font in Control Strip menus	22

3 Adjusting the Picture 23

Making adjustments to the picture	24
Adjusting the brightness of the picture	24
Adjusting the contrast of the picture	24
Adjusting the center of the picture	25
Adjusting the size of the picture	26
Adjusting the rotation and color uniformity of the picture	27
Adjusting the shape of the picture	28
Adjusting the convergence of the picture	29
Selecting the color temperature	30
Resetting controls to original levels	31
Resetting brightness and contrast	31
Resetting individual picture controls	32
Resetting all picture controls	32

4 Tips and Troubleshooting 33

Care and cleaning 33

Protecting your monitor from theft 34

Troubleshooting 34

Appendix A Notes for IBM PC-Compatible Users 41

Appendix B Technical Information 45

Communications regulation information

FCC statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against radio interference when the equipment is operated in a commercial environment.

Radio and television interference

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used in accordance with Apple's instructions, may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause such interference, in which case the user will be required to correct the interference at his or her own expense.

IMPORTANT Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC certification and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of Apple peripheral devices and Apple shielded cables and connectors between system components. It is important that you use Apple peripheral devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Apple peripheral devices and the proper shielded cables and connectors through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

DOC statement

DOC Class A Compliance This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Department of Communications.

Observation des normes—Classe A Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur : "Appareils Numériques", NMB-003 édictée par le ministre des Communications.

VCCI statement

情報処理装置等電波障害自主規制について

この装置は、第一情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って、住宅地域又はその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

1

Setting Up

The Apple Multiple Scan 20 Display is a two-page, Trinitron™ color monitor that supports a variety of resolutions. The instructions in this chapter discuss important safety information, setting up and connecting the monitor to your computer, and installing the Macintosh software on your computer. The Apple Multiple Scan 20 Display has a diagonal viewable image size of 19.1 inches.

Important safety instructions

For your own safety and that of your equipment, always take the following precautions.

Disconnect the power plug (by pulling the plug, not the cord) if any of the following conditions exists:

- the power cord or plug becomes frayed or otherwise damaged
- you spill something into the case
- your monitor is exposed to rain or any other excess moisture
- your monitor has been dropped or the case has been otherwise damaged
- you suspect that your monitor needs service or repair
- you want to clean the case (use only the recommended procedure described in “Care and Cleaning” in Chapter 4)

IMPORTANT The only way to disconnect power completely is to unplug the power cord. Make sure at least one end of the power cord is within easy reach so that you can unplug the monitor when you need to.

Be sure that you always do the following:

- Keep your monitor away from sources of liquids, such as wash basins, bathtubs, shower stalls, and so on.
- Don't remove the cover of the monitor.
- Don't set anything on top of the monitor (such as a book or cup).
- Keep the monitor's vents free from obstruction.
- Protect your monitor from dampness or wet weather, such as rain, snow, and so on.
- Read all the installation instructions carefully before you plug your monitor into a power source.
- Keep these instructions handy for reference by you and others.
- Follow all instructions and warnings dealing with your system.

WARNING Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables.

What about electromagnetic emissions?

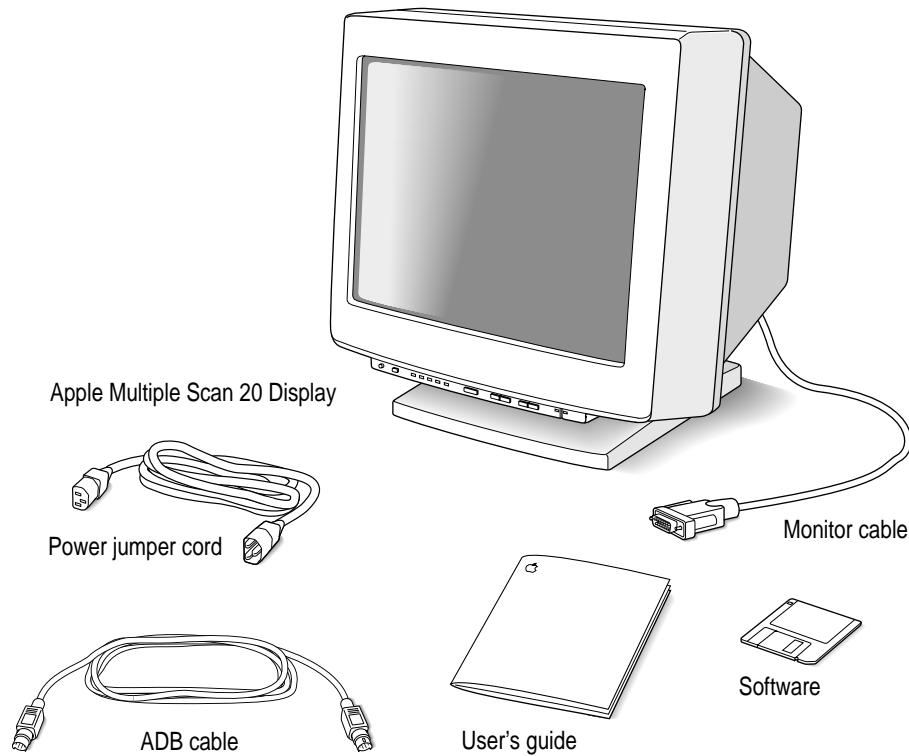
There has been recent public discussion of the possible health effects of prolonged exposure to extremely low frequency (ELF) and very low frequency (VLF) electromagnetic fields. Such fields are associated with electromagnetic sources such as television sets, electrical wiring, and some household appliances—as well as computer monitors.

Apple has reviewed scientific reports and sought the counsel of government regulatory agencies and respected health organizations. Based on the prevailing evidence and opinions, Apple believes that the electric and magnetic fields produced by computer monitors do not pose a health risk.

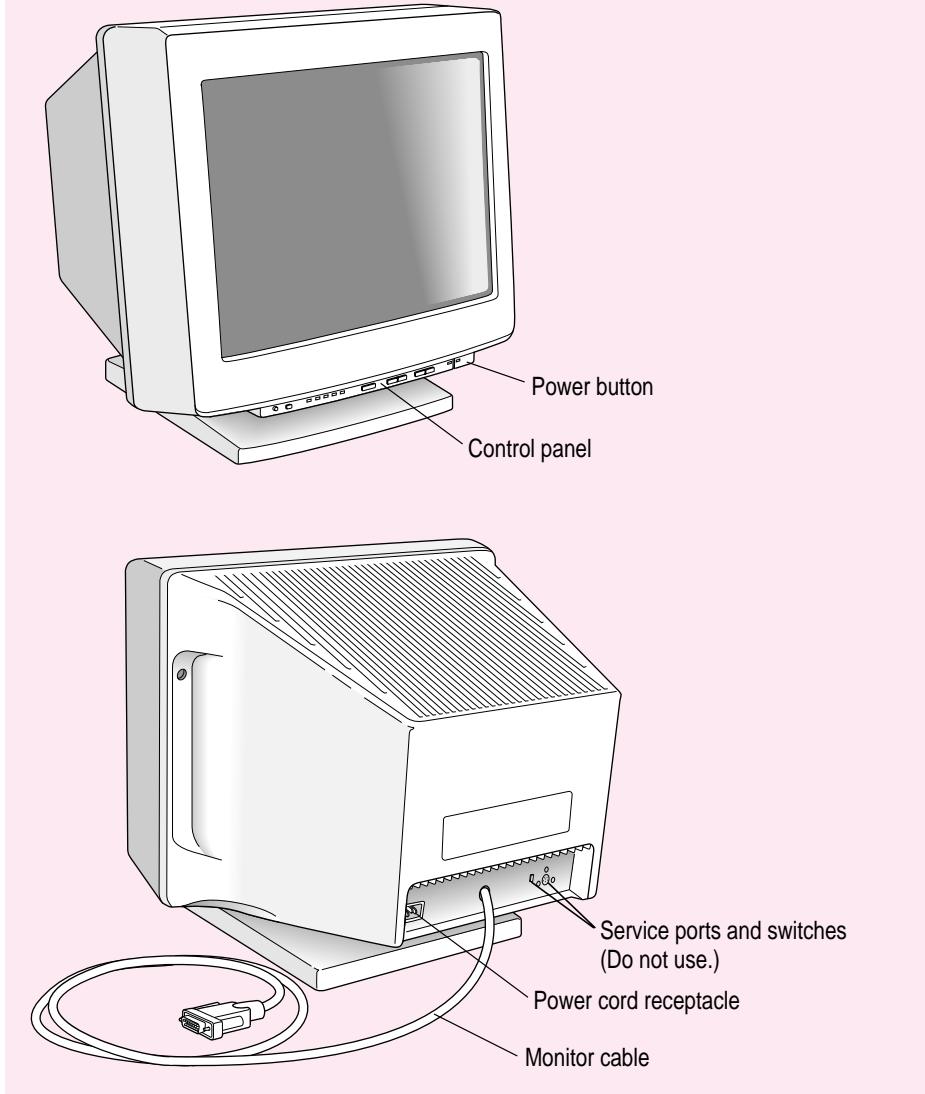
In response to those customers who wish to reduce their exposure to electromagnetic fields, Apple has lowered the emission levels of Apple monitors. We are also actively encouraging further scientific research so we can continue to promote the health and safety of our customers and employees.

Getting ready to set up

As you begin to set up your display system, be sure you have easy access to the items that came with your Apple Multiple Scan 20 Display.



Your Apple Multiple Scan 20 Display at a glance



Choosing a good location for your monitor

Here are some key factors to consider when determining where to place your Apple Multiple Scan 20 Display:

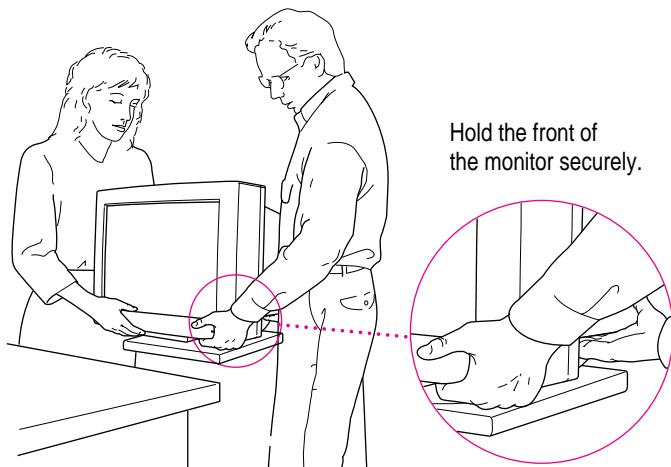
- Be sure that the desk or table can support the monitor's weight—approximately 66 pounds.

WARNING Never put the monitor on top of the computer. Because of its weight, the monitor could break the case and damage your computer.

- Make sure that the power cord and monitor cable will reach from the back of the monitor to your computer.
- The monitor cable should be unobstructed when you swivel and tilt the monitor, so allow at least 6 inches of clearance in the back. If you don't allow enough clearance, the monitor connector might be damaged when the cable hits an obstruction.

Lifting and positioning the monitor

WARNING Your Apple Multiple Scan 20 Display weighs approximately 66 pounds. Don't try to lift it by yourself; ask someone to help you. When you lift the monitor, bend from your knees, not your waist.

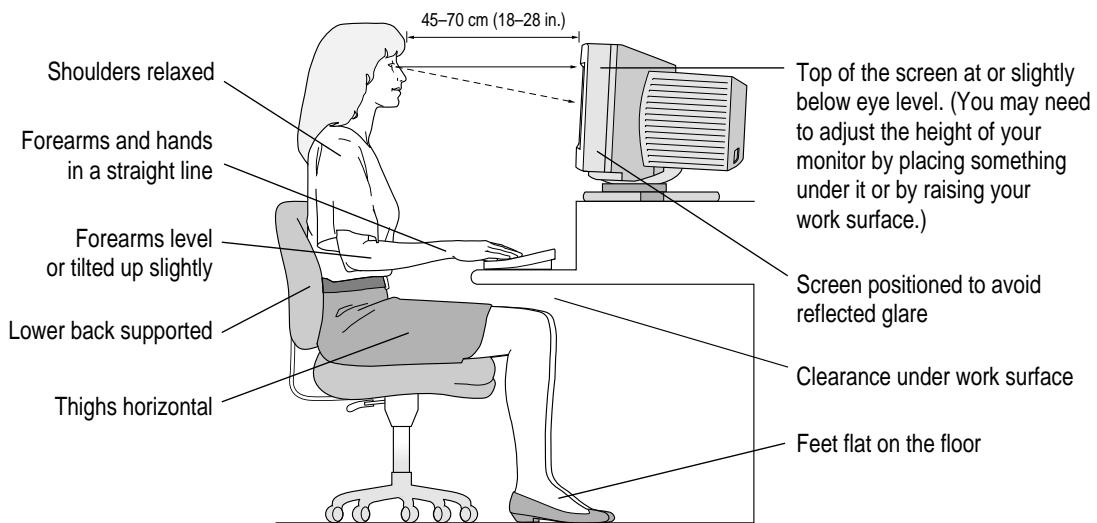


To position the monitor on a table or desk, follow these steps:

- 1** Place the monitor so that the screen faces the user.
- 2** To slide the monitor, lift the front up slightly and push or pull in the direction you want.
- 3** Adjust the viewing angle of the monitor by tilting it up or down and turning it left or right on its stand.

Position the monitor so that when you use it, no bright light is behind the monitor or reflected on the screen. Your eyes should be about level with the top edge of the screen and between 18 and 28 inches (45 to 70 cm) away. Take occasional breaks when using your computer, to focus your eyes on a distant object.

For your greatest comfort, use the following illustration to help you in positioning your monitor:



Do you need a video card?

To use the Apple Multiple Scan 20 Display, you need compatible video circuitry built into your computer or a compatible video card installed in your computer. If you are unsure whether your computer has the appropriate built-in video capability, check with an Apple-authorized dealer or service provider.

If your computer does not have the video capability necessary to use this monitor, you need to purchase a video card. (Video cards are available from an Apple-authorized dealer or service provider.) Install the video card before you connect the monitor to your computer. To install a video card in one of the expansion slots inside your computer, see the manual that came with your computer or video card.

Using more than one monitor

If your computer has expansion slots, you can use the Apple Multiple Scan 20 Display with one or more additional monitors connected to your computer. You may need a video card for each additional monitor you are using. See the manuals that came with your computer for information on working with additional monitors.

Note: If you see screen flicker or other interference when you use more than one monitor, move the monitors further apart or set the monitors at an angle, so their screens are close and their back panels are farther apart.

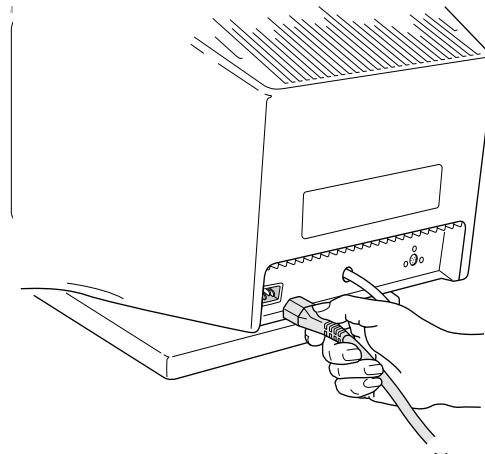
Connecting the monitor to your computer

Follow these steps to connect the monitor to your computer:

IMPORTANT Before you connect any cords or cables, make sure that your computer is turned off and unplugged.

WARNING This equipment is intended to be electrically grounded. Your monitor may be equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

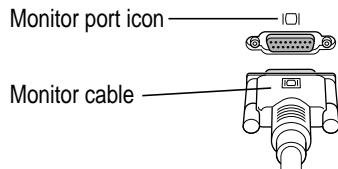
- 1 Connect the socket end of the power cord to the power cord receptacle on the back of the monitor.



- 2 Plug the other end of the power cord into the power socket on the back of the computer.

If your computer doesn't have an available power socket, you need a standard, detachable, power cord (listed by a relevant safety agency) to plug the monitor directly into a grounded AC outlet. You can get this cord from an Apple-authorized dealer or service provider.

3 Connect the monitor cable to the monitor port (marked with  on the back of your computer).



If you installed a video card in your computer, connect the monitor cable to the video card's port. For more information about installing video cards, see the manual that came with your computer or video card.

Note: If you're connecting the monitor to a Power Macintosh 6100, 7100, or 8100 with a high-density connector, you may need to use the monitor cable adapter that came with your computer. See the manual that came with your computer for more information. If you don't have an adapter, you can purchase one from an Apple-authorized dealer or service provider.

4 Tighten the thumbscrews on the connection.

You can prevent bad connections and accidental damage by tightening the thumbscrews. When tightening the thumbscrews on the cable connector, make sure you turn each screw at least one turn—but don't force the thumbscrew, because you might strip the threads.

Connecting your keyboard to the monitor

If you wish, you can plug your keyboard directly into the stand of the Apple Multiple Scan 20 Display, rather than into the back of your computer. The monitor stand has an Apple Desktop Bus (ADB) port on the back that you can use to connect the monitor to your computer (using the included ADB cable). There is also an ADB port on each side of the monitor stand for your keyboard (or any other ADB device).

IMPORTANT To prevent damage to your system, always be sure that your computer is shut down before you plug in or disconnect ADB cables.

If you decide to plug your keyboard cable into your monitor stand, follow these instructions:

- 1** Unplug the keyboard cable from the ADB port (marked by  on the back of the computer.
- 2** Plug the unattached end of the keyboard cable into the ADB port (marked by  on the left side of the monitor stand.

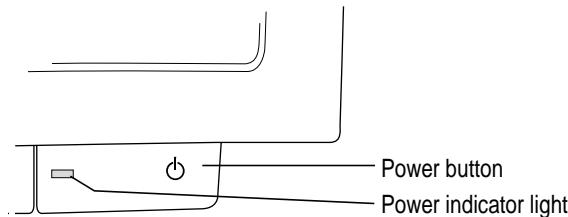
IMPORTANT When connecting ADB cables to the monitor stand, be sure the flat side of the connector faces up. If you force the connector the wrong way, you could damage it.

- 3** Attach one end of an extended ADB cable to the ADB port (marked by  on the back of the monitor stand.
- 4** Attach the other end of the extended ADB cable to an ADB port (marked by  on the back panel of the computer.

Turning the monitor on

To turn on the monitor for the first time:

- 1** Start up your computer.
- 2** Press the Power button on the front right side of the monitor.



The power indicator light goes on. If the power indicator light does not come on, press the power switch again. If this doesn't work, make sure you've connected the monitor to your computer properly (see "Connecting the Monitor to Your Computer," earlier in this chapter). Also, make sure your computer is turned on.

Note: If your monitor power cord is plugged into the back of your computer, you only need to turn on your monitor once, because the monitor is designed to get its power from your computer. From now on, the monitor will turn off automatically when you shut down the computer, and it will turn on automatically when you start up the computer.

To make full use of the features available to you with this monitor, install the Macintosh software.

Installing the display software

Note: Be sure you're acting within the terms of the software license agreement before you install this software on a computer. The license agreement specifies how many copies of the program you can make for yourself and others.

The display software works on any computer running Mac OS version 7.1 or later. To install the display software, follow these steps:

- 1 **Insert the *Apple Multiple Scan Software for Macintosh* disk into a floppy disk drive.**

The disk's icon appears on the desktop.

- 2 **Double-click the disk icon to open it.**



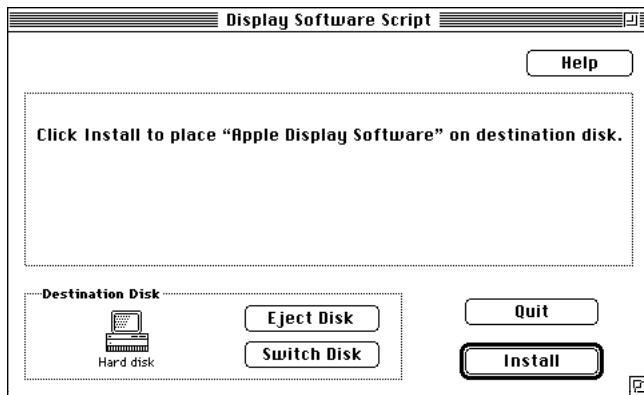
- 3 **Double-click the Installer icon to start the Installer program.**



After a moment, the Installer opens and you see the Welcome screen.

4 Read the Welcome screen and click OK.

The Installer screen appears.



5 Make sure the disk named in the box is the one on which you want to install the software. If not, click Switch Disk until the correct disk name appears.

6 Click the Install button.

The Installer takes a few moments to calculate what needs to be done and then begins to copy files.

7 When the installation is complete, follow the instructions on the screen.

After the installation, the Installer tells you to restart your computer (if you installed the software onto your startup disk) or to quit (if you installed the software onto another disk).

The software is now installed and the monitor is ready for use.

Note: To change the screen resolution, see “Changing Screen Resolution” in Chapter 2.

2

Using the Display Software

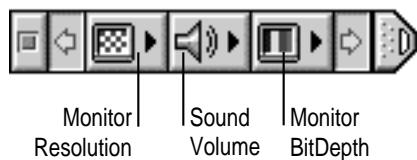


This chapter explains how to use the new display software you have installed. Your software includes a new feature called the Control Strip, which you can use to change monitor settings quickly and easily. You can use the Control Strip to change screen resolutions, change the number of colors your monitor displays, and change the volume of your computer's beep sound. Your monitor also comes with control panels that you can use to save energy and fine-tune your monitor's use of color.

About the Control Strip

When you start up your Macintosh after installing your new display software, you will notice the Control Strip at the lower-left edge of your screen. The Control Strip is a new way of changing certain settings from your desktop without opening control panels.

Note: Some versions of system software will show different modules in the Control Strip. If your Control Strip doesn't match what's shown here, consult the on-screen help that came with your computer or system software upgrade kit.



You can change the following settings with the Control Strip modules:

- Monitor Resolution lets you change the resolution of the screen.
- Monitor BitDepth lets you change the number of colors on your screen.
- Sound Volume lets you change the volume of the system sound.

To use a module, press it and choose a setting from the pop-up menu that appears.

Note: If you use more than one monitor, the monitors are identified by number in the Control Strip menus. To see which number goes with which monitor, experiment with the modules, or open the Monitors control panel (in the Control Panels folder, available from the Apple  menu) and press the Identify button. The number of each monitor appears on its screen. (On some models, the control panel has a different name.)

Working with the Control Strip

You can move, collapse, and expand the Control Strip, and you can change the order of the controls.



- To move the Control Strip, hold down the Option key on your keyboard and drag the tab at the right end of the Control Strip. The Control Strip always stays on the left or right edge of a screen.
- To make the Control Strip shorter or longer, drag the tab to the left or right.
- To see hidden controls when the Control Strip is not expanded to its full size, click the right and left arrows.
- To collapse the Control Strip to its smallest size, click the tab or the box. To expand the collapsed Control Strip to its original size, click the tab.
- To move a control to a new position in the Control Strip, hold down the Option key on the keyboard and drag the control to where you want it.

For more information on setting up the Control Strip, see “Configuring the Control Strip,” later in this chapter.

Changing screen resolution

You can change the resolution of your monitor to zoom in for detail work or to zoom out and see a whole page or more at a time.

- **To change screen resolution with the Control Strip, press the Resolution control and choose the resolution you want in the menu.**



To change your screen resolution with the Monitors control panel, follow these steps:

Note: Some models use a different control panel. If you don't see the Monitors control panel, consult the on-screen help that came with your computer or system software upgrade kit.

- 1 **Choose Control Panels from the Apple (apple) menu.**

A window opens showing all the control panels.

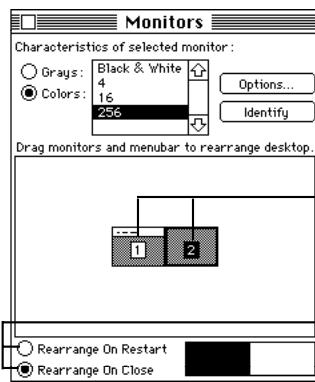
- 2 **Double-click the Monitors icon to open the Monitors control panel.**



Double-click the icon. (If you don't see it, click the scroll bar arrows. If you still can't find it, you may have forgotten to install the software, as described in Chapter 1.)

- 3 **Make the following choices in the control panel:**

Note: The choices you see in this window may differ from those shown here, depending on your computer, your video capability, and the monitors attached.



First, if you have more than one monitor, click here to see how your monitors are numbered.

Second, click the icon of the monitor you want to change. (If you only have one monitor, you will only see one choice.)

Third, choose when you want the change to take place after you close this window or when you restart your computer.

4 Click the Options button to see what resolutions you can choose.

5 Click a resolution to select it.

The choices you see in this window depend on your computer, video capability, and the monitors that are attached.

If you don't see any options for changing resolutions, you may have selected the wrong monitor in the control panel, or your computer and video card may not support multiple resolutions. Click Cancel, then try step 3 again.

Note: In some cases, you can see additional choices if you hold down the Option key on the keyboard while you click the Options button. However, these choices may not be optimized for your monitor. If you try to make a choice that is not optimized for your monitor, you'll see a message, or the monitor will go blank or show "static" for several seconds, then will switch back to an optimized resolution.

6 Click OK to return to the main window of the Monitors control panel.

Depending on which option you selected in the control panel, the new resolution will be displayed when you close the dialog box or when you restart the computer.

7 Close the Monitors control panel by clicking the close box in the upper-left corner.

IMPORTANT Make sure you close the Monitors control panel before starting any other work.

Note: When you change monitor resolutions, the folders and icons on your desktop may reposition themselves to accommodate the new screen size.

8 If the image is distorted, try another resolution, or adjust the controls on the monitor as explained in Chapter 3.

Other things you can do with the Monitors control panel

You can also use the Monitors control panel to

- arrange how multiple monitors work together
- choose how many colors or shades of gray each monitor can display (you can also make this change using the Control Strip)

See the instructions that came with your computer for details. (Some models have a different control panel.)

Conserving energy

Use the Energy Saver control panel to tell the monitor whether to conserve energy after a specified period of inactivity.

You can use the control panel if you have an Apple monitor and computer model that comply with the United States Environmental Protection Agency's Energy Star program. (Look for the EPA Energy Star logo on the box.)

To use the control panel, follow these steps:

1 Choose Control Panels from the Apple (apple) menu.

A window opens showing all the control panels.

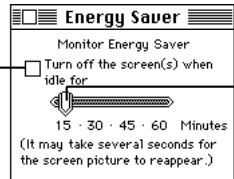
2 Double-click the Energy Saver icon to open the Energy Saver control panel.



Double-click the icon. (If you don't see it, click the scroll bar arrows. If you still can't find it, you may have forgotten to install the software, as described in Chapter 1.)

3 Make the following choices in the control panel:

Click here to turn Energy Saver on or off. When there's an X in this box, Energy Saver is on.



If Energy Saver is on, slide this control to determine how long Energy Saver will wait without activity before darkening the screen.

4 Close the control panel.

What happens after you turn on the energy saving feature

When Energy Saver is on, the monitor "goes to sleep" after a specified period of inactivity. The monitor screen looks dark and the monitor is using less energy. When the monitor is asleep, your computer is still working. But to prevent accidental changes, you can't make any changes while the monitor is asleep.

To “wake up” the monitor, move the mouse or press any key on the keyboard. Your computer beeps while the monitor is waking up. The process takes about 20 seconds, and you can begin work as soon as the computer stops beeping. (The beep volume cannot be adjusted; it is not controlled by the computer’s sound software.)

IMPORTANT The Energy Saver control panel works with Apple monitors (such as this one) that comply with the EPA’s Energy Star program and any other monitor that complies with the Video Electronics Standards Association’s Display Power Management Standard. Your computer model must also be compatible with Energy Star. Other monitors will darken after the specified inactivity period has passed, but they won’t go to sleep or save energy.

Using Energy Saver with a screen saver

“Screen saver” programs darken the screen or display a changing image on the monitor if the computer is not used for prolonged periods. Both screen saver programs and the Energy Saver feature prevent images from “burning in” and damaging the screen. Energy Saver also conserves energy.

If you wish, you can use both Energy Saver and a screen saver program. Set the screen saver to come on before Energy Saver, so if you’re away from the computer for a short while, you can return to work immediately, without waiting for the monitor to wake up. If you’re gone for a while longer, however, the monitor won’t use as much energy.

Using ColorSync

ColorSync is Apple’s unique color-matching software that ensures that Apple color printers print the best possible reproduction of the colors that appear on your monitor screen. ColorSync is also used by Apple color scanners and the QuickTake camera to capture color images and accurately reproduce their colors on the screen. ColorSync maintains consistent colors between color input, your monitor, and color printing devices so that the colors of your original image are accurately reproduced on screen and when printed.

The ColorSync software works automatically in the background. When you install the monitor software, your computer is automatically set to use ColorSync with your monitor.

If you use more than one color monitor with your Macintosh and want to print a color image from a specific monitor, you can obtain the best color matching by setting ColorSync to use a specific monitor.

To set up ColorSync for a specific monitor:

- 1 Choose Control Panels from the Apple (apple) menu.

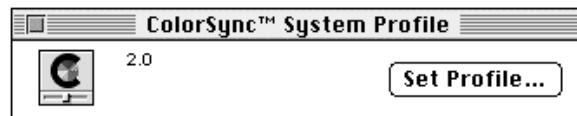
A window opens showing all the control panels.

- 2 Double-click the ColorSync icon to open the ColorSync control panel.



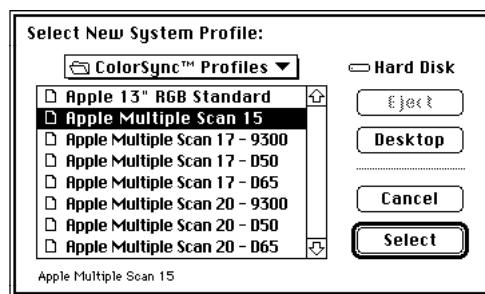
ColorSync™ System Profile

The ColorSync control panel appears.



- 3 Click Set Profile.

A dialog box appears that enables you to select the name of the monitor you want to use.



- 4 Click a monitor name to select it.

- 5 Click **Select** to return to the main window of the ColorSync control panel.
- 6 Close the ColorSync control panel by clicking the close box in the upper-left corner.

Configuring the Control Strip

With the Control Strip control panel, you can show and hide the Control Strip and choose a keyboard command to show/hide the Control Strip. You can also choose the font that appears in the Control Strip menus.

Showing and hiding the Control Strip

To show or hide the Control Strip, follow these steps:

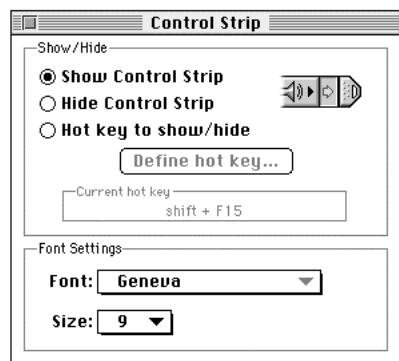
- 1 Choose **Control Panels** from the **Apple (apple)** menu.
- 2 Double-click the **Control Strip** icon to open it.



The Control Strip control panel appears.

- 3 To show or hide the Control Strip, click the button labeled **Show Control Strip** or **Hide Control Strip**.

The change takes effect immediately.



- 4 Click the close box to close the control panel.

Setting a keyboard command to show and hide the Control Strip

To set a keyboard command to show and hide the Control Strip, follow these steps:

- 1 Choose Control Panels from the Apple (apple) menu.
- 2 Double-click the Control Strip icon to open it.



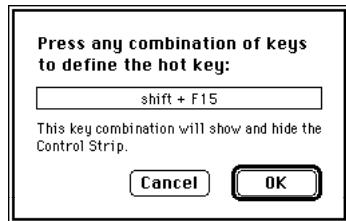
The Control Strip control panel appears.

- 3 To turn on the keyboard command for showing and hiding the Control Strip, click “Hot key to show/hide.”

The keyboard command for showing and hiding the Control Strip appears in the “Current hot key” window.

- 4 To change the keyboard command, click “Define hot key.”

A box appears.



- 5 Press the keys you want to use, then click OK.

You must include either the \mathbb{M} (Command) key or a function key (F1–F15). If you choose an inappropriate command, you see a message.

- 6 Click the close box to close the control panel.

Changing the font in Control Strip menus

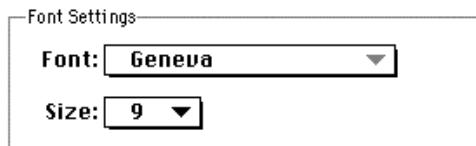
When you press a Control Strip control, you see a menu you can use to make changes. You can change the font and size of items in the menu. Follow these steps:

- 1 Choose Control Panels from the Apple () menu.
- 2 Double-click the Control Strip icon to open it.



The Control Strip control panel appears.

- 3 To change the font, choose a font from the Font pop-up menu. To change the font size, choose a size from the Size pop-up menu.



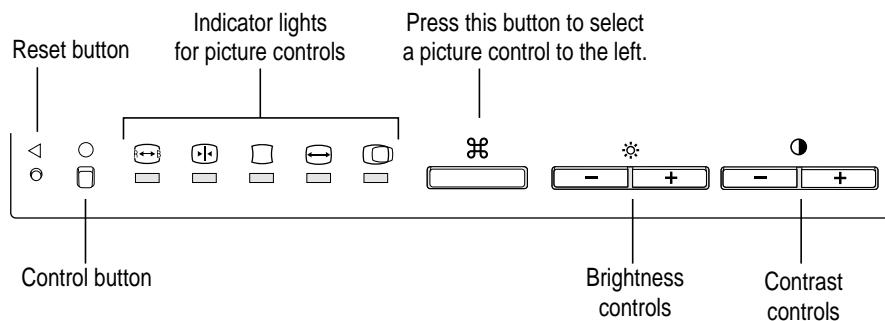
- 4 Click the close box to close the control panel.

3

Adjusting the Picture



In most cases, you won't need to make any adjustments in the picture. However, you can fine-tune the screen display to suit your preferences using the controls on the front of the monitor.



Making adjustments to the picture

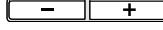
To adjust the picture, follow the instructions for the particular adjustment you want to make. When you make an adjustment while in a particular resolution, the changed information is stored in the monitor's memory for that resolution. Your monitor recalls these saved settings whenever it is in that resolution.

IMPORTANT If you try to adjust a particular picture control beyond its limits, the Energy Saving indicator light (to the right of the Power button) flashes.

Adjusting the brightness of the picture

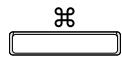
Use this control	Follow this step
 	Use the -/+ buttons below the brightness icon (☀). Press + to increase brightness and press - to decrease brightness.

Adjusting the contrast of the picture

Use this control	Follow this step
 	Use the -/+ buttons below the contrast icon (●). Press + to increase contrast and press - to decrease contrast.

Adjusting the center of the picture

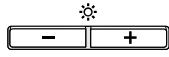
Use these controls



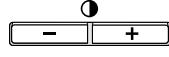
Follow these steps

1 Press and hold down the  button on the monitor until the  indicator light goes on, then release the button.

2 Adjust the center of the picture.



To move the center of picture vertically, use the  /  buttons below the brightness icon ().

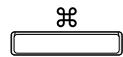


To move the center of picture horizontally, use the  /  buttons below the contrast icon ().

When the picture is centered properly, there is an equal border around all edges of the picture.

Adjusting the size of the picture

Use these controls

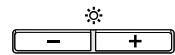


Follow these steps

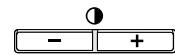
1 Press and hold down the  button on the monitor until the  indicator light goes on, then release the button.

2 Press the  button again until the  indicator light goes on.

3 Adjust the size of the picture.



To adjust the vertical picture size, use the -/+ buttons below the brightness icon ().

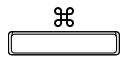


To adjust the horizontal picture size, use the -/+ buttons below the contrast icon ().

When the picture size is set properly, you are able to see the entire picture on the screen.

Adjusting the rotation and color uniformity of the picture

Use these controls

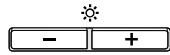


Follow these steps

1 Press and hold down the  button on the monitor until the  indicator light goes on, then release the button.

2 Press the  button again until the  indicator light goes on.

3 Adjust the rotation, or tilt, of the picture.



To change the rotation of the picture, use the -/+ buttons below the brightness icon (). Press + to tilt the picture clockwise. Press - to tilt the picture counterclockwise.

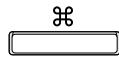
When the rotation of the picture is set properly, the bottom of the picture is parallel to the bottom of the display enclosure.

When you correct for picture rotation, color uniformity is also corrected. When the color is not uniform, you may see dark areas on some portions of the picture.

If your monitor is in an area that has a high degree of interference (for example, from another monitor), you may choose to adjust the rotation to optimize for color uniformity rather than picture orientation.

Adjusting the shape of the picture

Use these controls

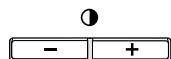


Follow these steps

- 1 Press and hold down the  button on the monitor until the  indicator light goes on, then release the button.
- 2 Press the  button again until the  indicator light goes on.
- 3 Adjust the shape of the picture.

To change the shape of the picture, use the -/+ buttons below the contrast icon (●). Press + to expand the sides of the picture, changing the shape from concave to convex. Press - to bring in the sides of the picture, changing the shape from convex to concave.

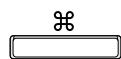
When the shape of the picture is set properly, all four sides of the picture are straight and the picture is rectangular.



Adjusting the convergence of the picture

Red, green, and blue signals in your monitor converge and create the colors you see on your screen. If the convergence is not set properly, images or text on your screen may appear fuzzy or blurred or you may get a “rainbow” effect with several colors forming the edges of images on the screen. If your monitor is exposed to external magnetic fields over a period of time, you may need to change the convergence to get a clear, distinct picture. Or, you may want to change the convergence according to your personal preference.

Use these controls

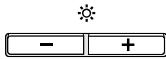


Follow these steps

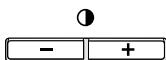
1 Press and hold down the  button on the monitor until the  indicator light goes on, then release the button.

2 Press the  button again until the  indicator light is on.

3 Adjust the vertical and horizontal convergence.



To adjust the vertical convergence, use the -/+ buttons below the brightness icon (). Press + to move the red signal up and the blue signal down. Press - to move the red signal down and the blue signal up.



To adjust the horizontal convergence, use the -/+ buttons below the contrast icon (). Press + to move the red signal to the right and the blue signal to the left. Press - to move the red signal to the left and the blue signal to the right.

When the convergence is set properly, the picture is clear and distinct.

Selecting the color temperature

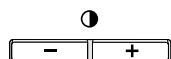
The image on your monitor is a combination of red, green, and blue signals. The intensity, or color temperature, of these signals can be changed to one of three settings: 9300 K (the default, which appears bluish), 6500 K (which is page white), or 5000 K (which appears reddish). At a higher color temperature, white appears as a slightly cooler, bluer white, while at a lower color temperature, white appears as a slightly warmer white. You can change the color temperature according to your personal preference or what is suitable for a particular application.

Use these controls



Follow these steps

- 1 Press and hold down the  button on the monitor until the  indicator light goes on, then release the button.
- 2 Press the  button again until the  indicator light goes on.
The  indicator light may or may not blink, depending on the color temperature selected. A steady light indicates 9300 K, a slow blinking light indicates 6500 K, and a fast blinking light indicates 5000 K.
- 3 Adjust the color temperature of the picture.
Use the -/+ buttons below the contrast icon (●). Press + to increase the color temperature or press - to decrease the color temperature.



Resetting controls to original levels

The picture controls for your monitor are set at the factory. You can fine-tune the picture and make adjustments if necessary (see “Making Adjustments to the Picture,” earlier in this chapter). If you later decide you want to revert back to the factory preset levels, you can reset the picture controls several ways.

- To reset brightness and contrast, see “Resetting Brightness and Contrast.”
- To reset individual controls, see “Resetting Individual Picture Controls.”
- To reset all controls, see “Resetting All Picture Controls.”

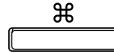
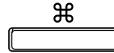
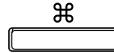
Resetting brightness and contrast

You can reset brightness and contrast to their original levels. You cannot reset only brightness or only contrast; both are reset at the same time.

Use this control	Follow this step
	<p>Press the Reset button (◀) using the tip of a pen.</p> <p>The brightness and contrast are reset to their original levels.</p>

Resetting individual picture controls

You can reset these individual controls to their original levels: horizontal and vertical shift, horizontal and vertical size, horizontal and vertical convergence, rotation, picture shape, and color temperature. (To reset brightness or contrast, see “Resetting Brightness and Contrast” in this section.)

Use these controls	Follow these steps
	<p>1 Press and hold down the  button on the monitor until the  indicator light goes on, then release the button.</p>
	<p>2 Press the  button again until the indicator light of the picture control you want to reset goes on.</p>
	<p>3 Press the Reset button () using the tip of a pen. The selected picture control is reset to its original level.</p>

Resetting all picture controls

If you like, you can reset all of the picture controls, including brightness and contrast, to their original levels.

Use these controls	Follow this step
	<p>While holding down the Control button () , press the Reset button () using the tip of a pen.</p>
	<p>All picture controls are reset to their original levels.</p>

4

Tips and Troubleshooting



This chapter includes information on the care and cleaning of your monitor, protecting your monitor from theft, and troubleshooting.

Care and cleaning

- Do not block the monitor's vents.
- Do not let liquid get on or into the monitor.
- If you will not be using your monitor and computer for a long period of time (a day or more), make sure you turn off the computer (and your monitor, if necessary).

To clean the case of the monitor:

- 1 Turn your computer and monitor off.
- 2 Disconnect the monitor's power plug from the back of the monitor. (Pull the plug, not the cord.)
- 3 Wipe the surfaces lightly with a clean, soft cloth dampened with water.

Don't use aerosol sprays, solvents, or abrasives that might damage the finish on the case.

To clean the screen of the monitor:

- 1 Turn your computer and monitor off.**
- 2 Disconnect the monitor's power plug from the back of the monitor. (Pull the plug, not the cord.)**
- 3 Use a mild, non-abrasive cleaner on a soft cloth and wipe the screen. Don't spray the cleaner onto the screen, because the liquid may drip inside the monitor.**

Protecting your monitor from theft

The slot on the back of the monitor is for connecting a security lock. It lets you attach a narrow, flexible cable that you can use to secure your monitor (and the rest of your computer system) to prevent theft. Security locks are available from an Apple-authorized dealer or service provider.

Troubleshooting

WARNING If you have a problem with your monitor and nothing presented in this manual solves it, consult the service and support information that came with your monitor for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to repair the monitor yourself, any damage you may cause to the monitor will not be covered by the limited warranty on your monitor. Contact an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

Solutions to common problems related to your monitor are described here. Problems related to the computer are covered in the manuals that came with your computer.

WARNING Never remove the cover from the monitor: you could come in contact with hazardous voltage.

The monitor's power indicator light doesn't come on.

- Make sure that the power cord is plugged in properly.

If the monitor power cord is plugged into a wall outlet, make sure the cord is firmly plugged in. Check to see whether power to the outlet has been interrupted. You can test the outlet by plugging in something that you know works—such as a desk lamp or radio. If the test appliance works, but the monitor doesn't, contact an Apple-authorized dealer or service provider.

If the monitor power cord is plugged into your computer, make sure your computer is on and the cord is firmly plugged in.

- Make sure the monitor cable is plugged into your computer properly.

If you have a video card installed in your computer, the monitor cable should be plugged into the port for the video card.

If you do not have a video card installed in your computer, the monitor cable should be plugged into the monitor port on the back of your computer.

- Make sure the thumbscrews on the monitor cable are tightened securely into the port connector.

No image appears on the screen and the monitor's power indicator light is on.

- The monitor may have gone to sleep. Move the mouse or press a key to wake the monitor. (See “Conserving Energy” in Chapter 3.)
- Make sure the monitor cable is connected properly to the back of the monitor.
- Make sure the monitor cable is connected to the correct port on the back of the computer.

If you have a video card installed in your computer, the monitor cable should be plugged into the port for the video card.

If you do not have a video card installed in your computer, the monitor cable should be plugged into the monitor port on the back of your computer.

- Make sure the thumbscrews on the monitor cable are tightened securely into the port connector.
- Make sure the brightness (❖) and contrast (●) controls are set correctly. See “Adjusting the Brightness of the Picture” and “Adjusting the Contrast of the Picture” in Chapter 3.

- If the power indicator light is yellow, check that your monitor cable is properly connected to the computer. If the cable is properly connected and the yellow light is on, you may need to install a video card in your computer or use an adapter connector. See “Do You Need a Video Card?” in Chapter 1.

The screen is dark or appears dim.

- Make sure that your computer and monitor are turned on.
- Make sure that the power cord and the monitor cable are securely connected at both ends.
- Increase the brightness of the picture. See “Adjusting the Brightness of the Picture” in Chapter 3.
- The Energy Saver option may be activated. Move the mouse or press any key on the keyboard to reactivate the monitor. In approximately 20 seconds (or until you no longer hear the beep), the monitor is reactivated.
- A screen saver that darkens your screen may be activated. Move the mouse or press any key on the keyboard to reactivate the monitor.

The screen flickers.

- Make sure the monitor cable is connected firmly to the correct port on the back of the computer.
If you have a video card installed in your computer, the monitor cable should be plugged into the port for the video card.
If you do not have a video card installed in your computer, the monitor cable should be plugged into the monitor port on the back of your computer.
- The flickering could be caused by interference from a nearby power line, a fluorescent light, or electrical device—for example, a radio, a microwave oven, or another computer. Try relocating nearby electrical devices, or moving your computer and monitor.
- If you have more than one monitor attached to your computer, the monitors might be interfering with one another. Move the monitors farther apart or set the monitors at an angle, so their screens are close and their back panels are farther apart. If after moving the monitors more than 16 inches apart you still see flickering, contact an Apple-authorized dealer or service provider.

- If you are using a video card that has a very low refresh rate (below 60 hertz), the monitor may flicker. You may be able to change the refresh rate for the card. See the manual that came with your video card for more information.

No colors appear on the screen.

- Check to make sure that the number of colors is set correctly in the Control Strip or the Monitors control panel. See “Using the Control Strip” in Chapter 2, and see the documentation that came with your computer. (Some models have a different control panel.)

The screen image is off center.

- Try changing to another resolution. See “Changing Screen Resolution” in Chapter 2.
- Adjust the center of the picture. See “Adjusting the Center of the Picture” in Chapter 3. (Keep in mind that if you adjust the center of the picture, you may have to adjust it again if you change resolutions.)

The screen image is too large or too small.

- Try changing to another resolution. See “Changing Screen Resolution” in Chapter 2.
- Adjust the horizontal or vertical size of the picture. See “Adjusting the Size of the Picture” in Chapter 3. (Keep in mind that if you adjust the size of the picture, you may have to adjust it again if you change resolutions.)

Before you finish adjusting the monitor controls, the indicator light goes out.

- If you pause for 10 seconds or more while adjusting the controls, the monitor assumes you are finished.

The screen appears greenish, the screen image is unreadable, or there is “snow” on the screen.

- Make sure the monitor cable is connected firmly to the correct port on the back of the computer.

If you have a video card installed in your computer, the monitor cable should be plugged into the port for the video card.

If you do not have a video card installed in your computer, the monitor cable should be plugged into the monitor port on the back of your computer.

After many hours of use, the screen image appears dim.

- Increase the brightness of the picture to your preference. See “Adjusting the Brightness of the Picture” in Chapter 3.

Over time, you experience eyestrain.

- Adjust the screen contrast. In a bright room, contrast is usually best set at maximum; in a dim room, lower contrast is usually more comfortable. See “Adjusting the Contrast of the Picture” in Chapter 3. Also, be sure to take occasional breaks to focus your eyes on a distant object.

You don't hear any sound from your computer.

- The computer's internal speaker is turned off whenever a cable is connected to the sound output port (marked by ) on the back panel of your computer. If the sound output port is in use, you can still hear sound from the monitor's speakers or from headphones connected to the monitor's headphone port (marked by )

You can't find the Control Strip.

- You may have hidden the Control Strip. Open the Control Strip control panel and click the button labeled “Show Control Strip.”

You can't control the sound volume of a CD.

- The volume control on the Control Strip affects the computer's beep sound only. To control the volume of a CD, use the AppleCD Audio Player, located in the Apple () menu.

You don't see the monitor resolution you want.

You can see additional resolution choices in the Monitors control panel if you hold down the Option key on your keyboard while you click the Options button in the control panel. In the list that appears, click the resolution you want. (Some models use a different control panel. Consult the documentation that came with your computer or system software upgrade kit.)

Note: Some of the items in this list are not optimized for your monitor. If you choose a resolution that doesn't work with your monitor, you may see a message, or your monitor may go blank or show static. After approximately 15 seconds, your monitor should revert to a usable resolution. If it does not, restart your computer.

After you change the screen resolution, a window is stuck, halfway off the screen, or missing; or you can't see the whole screen.

Try one of the following:

- If you changed the resolution in the control panel, make sure the control panel is closed before trying to use another window.
- Quit the program whose window is missing and then open it again.
- If the program has a Windows menu, use it to hide the problem window and then show it again.
- Go back to the resolution you were using, close the window, change the resolution, and then reopen the window.
- Try another resolution.

If you have problems with a particular program, contact the publisher of that program. Not all programs take advantage of the Multiple Scan Display's new features.

After you change the number of colors displayed on the screen, the colors don't look right.

Try one of the following:

- Quit the program you're running and start it again.
- Go back to the number of colors you were using.

After you change the screen resolution, icons move.

Changing the screen resolution affects how information can be displayed on your screen. The display software may automatically reposition icons after you change the screen resolution.

After you attached a new monitor to your computer, the new monitor's screen is blank or shows "garbage" or "snow."

The computer may not have recognized the monitor. Try the following: Turn off the computer and disconnect the new monitor. Start the computer with no monitor attached. Wait a minute or so for the computer to finish turning itself on. Turn off the computer again and reattach the new monitor.

The monitor does not go to sleep.

Some monitors, computers, and video cards do not support the Energy Saver feature. See the documentation that came with your monitor and video card for more information.

If you have a Power Macintosh 9500, you can get an upgrade to your software that allows your monitor to work with Energy Saver. Call the Apple Service and Support number found in the service and support information that came with your computer.

When you use both Energy Saver and a screen saver program, the screen freezes.

The screen saver program may be conflicting with Energy Saver. Turn off either the screen saver program or the Energy Saver control panel.

You see two resolution options labeled 640x870 (75 Hz).

If you're using the Macintosh 24AC video card, you may see two apparently identical resolution selections. The first option sets your monitor to display millions of colors, and the second option sets your monitor to display 256 colors.

When you change resolutions, the monitor goes blank.

If your monitor is connected to the Macintosh 24AC video card, the monitor may go blank for 15 seconds when you select a resolution that does not work with your monitor. Try selecting another resolution.



Appendix A Notes for IBM PC-Compatible Users

• • • •

To use the Apple Multiple Scan 20 Display with an IBM PC-compatible computer, follow these instructions.

IMPORTANT Follow all of the safety instructions in Chapter 1.

Compatibility

The Apple Multiple Scan 20 Display works with most IBM PC-compatible computers equipped with VGA (Video Graphics Array) or greater capability. You may need to install a video card to use the monitor with your computer. For more information, see the manuals that came with your computer.

The monitor is preadjusted and works with any computer that has the following timing ranges:

- horizontal scan rate of 30–82 kilohertz
- vertical refresh rate of 50-120 hertz

In addition, this monitor also works at the following VESA (Video Electronics Standards Association) standard modes:

Resolution	Vertical refresh rate (hertz)
640 x 480	60 (not VESA, but supported anyway)
640 x 480	75
800 x 600	75
1024 x 768	75
1280 x 1024	75

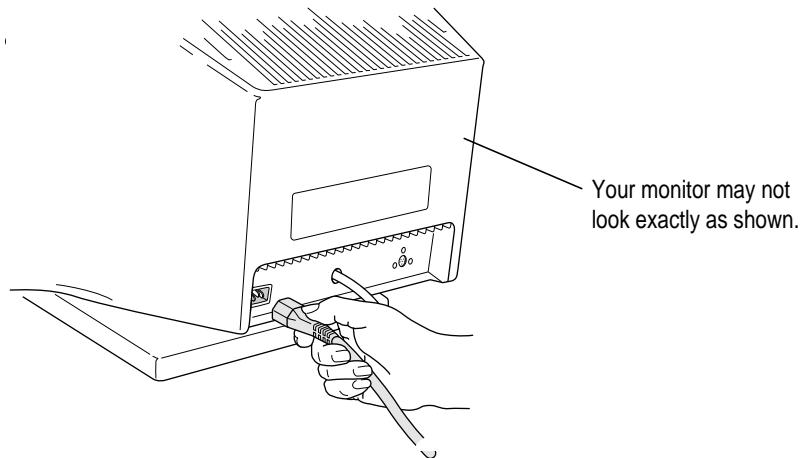
Connecting the monitor to your IBM PC-compatible computer

Use these instructions to connect the monitor to your computer, instead of the instructions in Chapter 1.

Note: If you need to use a video card with your computer, install the card before you connect the monitor to your computer.

IMPORTANT Before you connect any cords or cables, make sure that your computer is turned off and unplugged.

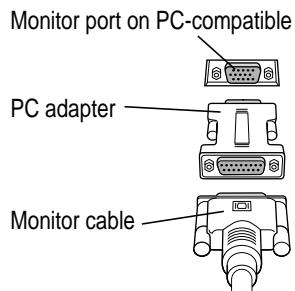
- 1 Connect the socket end of the power cord to the power cord receptacle on the back of the monitor.



2 **Plug the other end of the power cord into the monitor power socket on the back of your computer.**

If your computer doesn't have a power socket, you need a standard, detachable, power cord (listed by a relevant safety agency) to plug the monitor directly into a grounded AC outlet. You can get this cord from an Apple-authorized dealer or service provider.

3 **Connect the PC adapter to the monitor cable.**



This adapter is shipped with your monitor.

4 **Tighten the thumbscrews on the monitor cable.**

You can prevent bad connections and accidental damage by tightening the thumbscrews.

5 **Connect the PC adapter end of the monitor cable to the monitor port on the back of your computer.**

If you installed a video card in your computer, connect the monitor cable (with the PC adapter attached to it) to the video card's port. For more information about installing video cards, see the manual that came with your computer or video card.

Using the monitor

For instructions about turning on your monitor, see “Turning the Monitor On” in Chapter 1. To change resolutions on your monitor, see the manuals that came with your operating software or video card.

In most cases, once you turn on the monitor, you will not have to make any adjustments to the picture. If necessary, you can adjust or fine-tune the picture to suit your personal preference. See Chapter 3 for more information.

Note: The files on the *Apple Multiple Scan Software for Macintosh* disk are useful only for Macintosh computer systems.



Appendix B Technical Information

• • • •

Picture tube

- 20-inch (19.1-inch diagonal viewable image size) Trinitron CRT
- Multiple scan (30-82 kilohertz) (50-120 hertz)
- Resolution range: 640 x 480 to 1280 x 1024

Screen

- 0.26 millimeter (mm) pitch
- Bonded glass panel with antiglare/antistatic multilayer coating

Input signals

- Red, green, and blue signals; separate sync, composite sync, and composite video

Power savings feature

- Conforms to the Energy Star program of the United States Environmental Protection Agency

User controls

- Power-on switch
- Automatic degauss at power-up; manual degauss by turning power switch off, then on (capable of full degauss after monitor is turned off for 20 minutes or more)

- Control buttons: Reset (◀), Control (○), ≈, Brightness (❖), Contrast (●)
- Additional picture controls available using the ≈ button: horizontal and vertical shift, horizontal and vertical size, rotation and color uniformity, horizontal and vertical convergence, and color temperature

Active video image area

- Adjusted at the factory for the following standard modes:

Mode	Resolution	Vertical refresh rate (hertz)	Horizontal scan rate (kilohertz)
VGA	640 x 480	59.95	31.47
Macintosh	640 x 480	66.7	35.0
VESA	640 x 480	75	37.5
VESA	800 x 600	75	46.9
Macintosh	832 x 624	75	49.73
Macintosh	1024 x 768	74.93	60.24
VESA	1024 x 768	75	60.02
Macintosh	1152 x 870	75	68.7
VESA	1280 x 1024	75	79.98

Input electrical requirements

- Voltage 90-132, 198-260 V
- Frequency 47-63 Hz
- Power 165 W maximum

Weight

- Approximately 66 pounds (30 kilograms)

Dimensions

- Height 474 mm ± 5 mm
- Width 474 mm ± 5 mm
- Depth 501.5 mm ± 5 mm

Tilt swivel base

- Tilt –5 to + 15°
- Swivel range ± 45° minimum

Interfaces

- Apple Desktop Bus (ADB): one input port and two pass-thru output ports

Temperature

Celsius (C) and Fahrenheit (F)

- Operating 10° to 40° C (50° to 104° F)
- Storage 0° to 60° C (32° to 140° F)
- Shipping –40° to 60° C (–4° to 140° F)

Humidity (noncondensing)

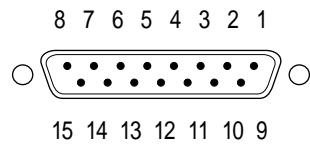
- Operating 10% to 80%
- Storage 5% to 90%
- Shipping 5% to 95%

Altitude

- Operating 0 to 10,000 feet (ft.)
- 0 to 3048 meters (m)
- Shipping 0 to 35,000 ft.
- 0 to 10,670 m

Monitor cable specifications

- 15-pin miniature D-type connector



Pin	Output signal
1	Red video ground
2	Red video
3	Not used
4	ID 1
5	Green video
6	Green video ground
7	ID 2
8	Not used
9	Blue video
10	ID 3
11	V Sync Return
12	V Sync
13	Blue video ground
14	H Sync Return
15	H Sync
Shell	Shield ground



Apple Computer, Inc.

1 Infinite Loop
Cupertino, California 95014-2084
408.996.1010

030-8886-A
Printed in U.S.A.